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Turning a Blind Eye? Punishment of Friends and Unfamiliar Peers After Observed Exclusion in Adolescence

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In order to decrease the occurrence of social exclusion in adolescence, we need to better understand how adolescents perceive and behave toward peers involved in exclusion. We examined the role of friendships in treatment of perpetrators and victims of social exclusion. Eighty-nine participants (aged 9–16) observed exclusion of an unfamiliar peer (victim) by their best friend and another unfamiliar peer. Subsequently, participants could give up valuable coins to altruistically punish or help peers. Results showed that participants altruistically compensated victims and punished unfamiliar excluders, but refrained from punishing their friends. Our findings show that friendship with excluders modulates altruistic punishment of peers and provide mechanistic insight into how friendships may influence treatment of peers involved in social exclusion during adolescence.

One of the prime human needs is the need to belong, characterized by the tendency to seek out, form, and maintain strong relationships with others (Baumeister & Leary, 1995). Social rejection, which thwarts this fundamental need to belong, is a common threat, ranging from a prevalence of 15% to 50% across countries (Molcho et al., 2009; Wang, Iannotti, & Nansel, 2009). Two often identified forms of social rejection are bullying (characterized by an excessive amount of negative attention given to a victim, for instance in the form of hitting or name calling) and social exclusion (characterized by a complete absence of attention given to a victim, for instance by ignoring, or not allowing to join in play). Both forms of social rejection have extensive negative consequences for the victim, where victimization has been linked to negative health outcomes (Giletta et al., 2017) and a decreased sense of well-being (Gorrese & Ruggieri, 2012; Juvonen, Nishina, & Graham, 2000; O'Brien & Bierman, 1988; for a review on the effects of social exclusion, see Williams, 2007; for a review on the effects of bullying, see Wolke & Lereya, 2015).

Prevention of bullying and social exclusion in adolescence is an important issue, considering the high prevalence of social exclusion during childhood and adolescence (Craig & Harel, 2004; Jansen et al., 2012; Molcho et al., 2009) and negative consequences of social exclusion for victims (Isaacs, Hodges, & Salmivalli, 2008), witnesses (Nishina & Juvonen, 2005), and bullies (Nansel, Craig, Overpeck, Saluja, & Ruan, 2004). Moreover, the majority of social exclusion takes place in the presence of peers (Atlas & Pepler, 1998). Research has indicated that besides the perpetrator and the victim, the larger peer group is often involved in bullying or social exclusion incidents (Salmivalli, 2010). Peers involved in social exclusion can often be classified by different participant roles such as assistants of excluders, reinforcers of excluders, outsiders, and defenders of victims (Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996). Perceptions of the peer group about bullying and exclusion affect the frequency of these

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behaviors. For instance, increased support and reinforcement of bullies increase bullying in the peer group, whereas higher levels of support for the victim decrease bullying (Faris & Ennett, 2012; Salmivalli, Voeten, & Poskiparta, 2011). In a similar vein, a recent large-scale field study showed that interventions aimed at changing perceptions in the peer group can effectively reduce overall levels of conflict in schools (Paluck, Shepherd, & Aronow, 2016). One of the key motivations behind bullying is a possible increase in status for the bullies (Caravita & Cillessen, 2012; Juvonen & Galván, 2008; Pellegrini & Long, 2002; Pouwels et al., 2017; Salmivalli & Peets, 2009; Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009). Considering the key role peers have in stopping or maintaining bullying, a bully's pursuit of status in the peer group may be more successful in peer groups with more positive perceptions of bullies. Moreover, friendship with the perpetrators of social exclusion (i.e., the excluders) might influence the degree to which excluders are supported or punished in real-life social exclusion situations. Such support or punishment behavior is likely to determine whether or not social exclusion perseveres over time.

Over the last decade, a large number of experimental studies have examined social exclusion using the experimental paradigm Cyberball, a virtual ball-tossing game in which one player is typically excluded by two other players (Williams, Cheung, & Choi, 2000). In these studies, Cyberball has been shown to have robust negative effects on mood and need satisfaction of victims of exclusion across the lifespan (Lustenberger & Jagacinski, 2010; Williams, 2007; for a recent meta-analysis of Cyberball studies, see Hartgerink, Van Beest, Wicherts, & Williams, 2015). In addition, it has been shown that merely observing social exclusion is associated with similar negative consequences on mood (Beeney, Franklin, Levy, & Adams, 2011; Nishina & Juvonen, 2005; Wesselmann, Bagg, & Williams, 2009), which holds across a broad age range between 9 and 22 (Will, Crone, Van den Bos, & Güroğlu, 2013).

Recently, several studies have experimentally examined the behavioral consequences of exclusion on subsequent social interactions using monetary allocation games that aimed to investigate behavior after exclusion. In such allocation games participants typically divide valuable units (e.g., coins) between themselves and at least one other player. These games are highly suitable and efficient in assessing punishment and compensation behavior under different conditions (Will & Güroğlu, 2016). Findings show that victims of exclusion typically punish bullies (i.e., initiators of social exclusion) (Gunther Moor et al., 2012), even when punishment is costly (Will, Crone, & Güroğlu, 2015). A similar effect on punishment of bullies has also been shown in experiments of observed exclusion: individuals who observe social exclusion of others tend to punish the bullies, also referred to as "third-party punishment." Furthermore, they also help victims of exclusion when it is costly (Will et al., 2013) or show prosocial behavior toward the victims in the form of helping and comforting (Masten, Eisenberger, Pfeifer, & Dapretto, 2010). A developmental study has further shown that punishment of bullies and compensation of victims increases with age across adolescence and is related to the developing ability to take another person's perspective (Will et al., 2013).

The majority of studies on effects of being excluded or observing exclusion has examined interactions with unfamiliar others. Given the high impact of different roles of peers in social exclusion situations (Salmivalli, 2010), it is highly likely that existing relationships (such as friendships) with excluders and victims will influence how peers witnessing exclusion will treat these excluders and victims. For example, a positive relationship with a bully might lead a witness to turn a blind eye. One study in young adults showed that participants punished unfamiliar excluders more than they did familiar excluders (i.e., classmates), especially when they liked the familiar excluder more than they liked the victim (Güroğlu, Will, & Klapwijk, 2013). This finding shows that existing peer relationships in adults influence how individuals treat excluders and victims upon witnessing social exclusion. However, it is unknown how differential treatment of excluders depending on existing friendships develops across adolescence, which is a developmental period during which friendships are known to become increasingly important for well-being (Berndt, 1992; Larson & Richards, 1991; Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). The goal of this study was to fill this gap in the literature by investigating how friendship modulates behavioral responses to social exclusion across late childhood and adolescence. We specifically examined how witnesses of social exclusion treat perpetrators depending on whether the perpetrator is their friend or an unknown peer.

Children and adolescents (aged 9–16) were invited to the current study with their best friend and first played one round of Cyberball and subsequently observed two rounds of Cyberball (see Figure 1 for an overview of the experimental

procedure). All Cyberball rounds involved other players who were unfamiliar to the participants, except for their best friend who was depicted as an excluder (i.e., bully) in the third Cyberball round. Using one-shot monetary allocation games in between the Cyberball rounds, we examined how participants treated peers with different roles in social exclusion (i.e., includers, excluders, and victims). In order to investigate both non-costly and costly punishment, we included two different allocation games (games in which participants divide valuable units between themselves and another player), namely, the Dictator Game to assess non-costly punishment and the Altruistic Punishment/Compensation Game to assess costly punishment. Of specific interest was the third round of Cyberball, in which we examined treatment of an unfamiliar victim, an unfamiliar excluder, and an excluder who was the participant's best friend. Based on prior findings, we expected participants to show decreases in mood upon observing exclusion (Wesselmann, Williams, & Hales, 2013). In line with previous studies, we also expected participants to punish perpetrators of social exclusion and compensate victims by allocating more coins to them (Will et al., 2013). We further hypothesized that there would be an age-related increase in both punishment and compensation behavior based on findings showing that with increasing age adolescents get consistently better at integrating information about the social context (Güroglu, van den Bos, & Crone, 2014; Overgaauw, Güroğlu, & Crone, 2012), interaction partners (Güroğlu, van den Bos, van Dijk, Rombouts, & Crone, 2011; Overgaauw et al., 2012), and their intentions (Güroğlu, van den Bos, & Crone, 2009) when making decisions. This age-related increase in punishment behavior was expected for the unfamiliar excluder.

Furthermore, we expected a contextual influence, reflected in differential treatment of excluders such that participants would punish unfamiliar excluders more severely than excluders who are their friends (Güroğlu et al., 2013). Since literature points to early- to mid-adolescence as a period of increased sensitivity for the peer group and friendships (Braams, van Leijenhorst, & Crone, 2014; Knoll, Leung, Foulkes, & Blakemore, 2017; Knoll, Magis-Weinberg, Speekenbrink, & Blakemore, 2015; Van Hoorn, Van Dijk, Güroğlu, & Crone, 2016), we hypothesized that early and mid-adolescents would differentiate between unfamiliar and friend excluders by punishing friends less than unfamiliar excluders, whereas preadolescents would treat friend and unfamiliar excluders in similar ways.

METHODS

Participants and Procedure

Eighty-nine participants from three age groups were recruited through advertisements and media. The sample included 23 9–11-year-olds (M_{age} = 10.45, SD_{age} = 1.41, 12 girls), 34 12–13-year-olds (M_{age} = 12.47, SD_{age} = 0.10, 16 girls), and 32 15–16-year-olds (M_{age} = 15.91 years, SD_{age} = 0.82, 16 girls). There were no differences in gender distribution between the three groups, $\chi^2(2) = .29$, $p = .86$. Four participants were excluded from the analyses. One participant was excluded because he gave the same response to all Likert scale items, one did not complete the experiment, and two others explicitly indicated their disbelief in the cover story to the experimenter after the Cyberball sessions.

All participants arrived in the laboratory together with their best friend. At the start of each session, participants were gathered in a room with their friends and six age-matched confederates. Confederates were recruited from local theatre schools and were all instructed extensively prior to the data collection session. The confederates introduced themselves by saying their name and shaking hands with the participant and their best friend. Participants were informed that they would be taking part in a study where they would engage in online interactions with one another (i.e., with their friends and the confederates). They were told that they would all be taken to separate testing rooms. After this brief introduction, participants remained in the room; their best friend and the confederates were taken to separate testing rooms, upon which the confederates in fact left. The participants did not see the confederates again after this point and they did not see their friend until after they completed the study. Unbeknownst to the participants, their friends took part in a different study that is reported elsewhere (Van Hoorn et al., 2016).

Participants started the experimental session by playing the Dictator Game, a monetary allocation game in which participants have full control over the division of valuable units between themselves and the other player. In the first round of the Dictator Game, participants were asked to distribute 10 valuable coins between themselves and every other player in subsequent one-shot trials. The game consisted of a total of eight divisions that served as a baseline measure of their allocation behavior toward the other players (i.e., their friend

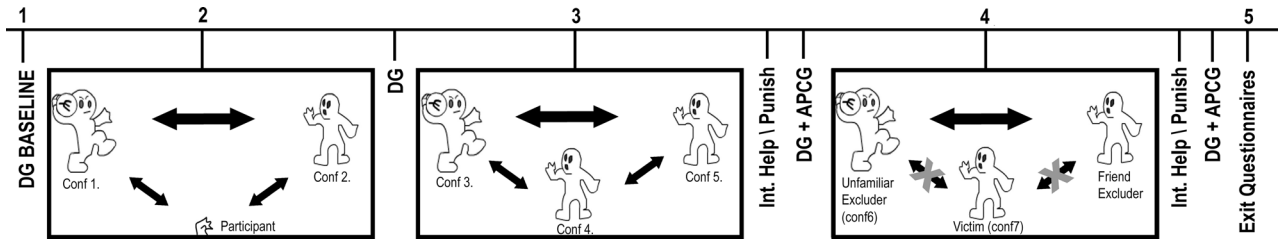

FIGURE 1 Experimental procedure where the participants (1) first rated their own mood and played the Dictator Game (DG) for all confederates (1–7) and their friend, then participated in (2) a Cyberball inclusion game with two confederates (confederate 1 and 2), followed by a second round of self-mood ratings, mood estimations of other players and the Dictator Game for confederates 1 and 2. Then, (3) participants *observed* Cyberball inclusion of three confederates (confederates 3–5), followed by rating their mood, their intentions to punish/help these players, by estimating the mood of the other players, and by playing the Dictator Game and the Altruistic Punishment/Compensation Game (APCG) for them. Next, (4) participants *observed* their best friend and a confederate (confederate 6) exclude a third confederate (the victim, confederate 7), followed again by rating their mood and their intentions to punish/help these players, by estimating the mood of other players and by playing the Dictator Game and Altruistic Punishment/Compensation Game for them. Finally, at the end of the experimental session, (5) participants filled out several exit questionnaires.

and the confederates). Then, participants played one round of online Cyberball, and subsequently observed two rounds of online Cyberball games. In between each round participants (1) reported their own mood and estimates of the other players' mood and (2) played another Dictator Game where they could distribute coins between themselves and players from the prior Cyberball round. After each of the observed Cyberball rounds, participants also played an Altruistic Punishment/Compensation Game, where they could choose to give up valuable coins to punish a player (i.e., by decreasing the other person's coins) or compensate a player (i.e., by increasing the other person's coins). See Figure 1 for an overview of this experimental session involving the Cyberball and the allocation games. After this experimental session, participants filled out several questionnaires on the computer. In the final questionnaire, we evaluated belief in the cover story based on two open-ended questions without directly posing the question whether participants believed in it: "What was it like to play the ball game with other players over the internet?" and "What was it like to observe the others play the ball game?" No participants were excluded from the analyses due to their answers to these two questions. Two participants indicated after the full experiment that they did not believe the cover story and were excluded from analyses. The complete session lasted for about 45 min in total. Informed consent was obtained from the participants and the parents of participants younger than 16 years old. The local institutional ethics review board approved of all procedures. At the end of each session, participants were debriefed fully and all participants received a monetary compensation of 20 euros for their participationplus their earnings from the allocation games (see below for more information).

Materials

Cyberball. All participants played one round and observed two rounds of the virtual ball-tossing game Cyberball in a predetermined order (Williams et al., 2000). Unbeknownst to the participant, the throws of the other two players were preprogrammed. The instructions emphasized that there would be new players in each round; participants were able to see the names of the other players on the screen, displayed above the avatars of each respective player. During the first ball-tossing round (hereafter referred to as "inclusion"), participants were included by the two other players (i.e., confederate 1–2). The "inclusion" round was programmed so that each player received the ball 10 times (out of 30 passes in total). During the second and third rounds of Cyberball, participants observed the exclusion of an unfamiliar peer. Unbeknownst to the participant, these players were in fact confederates of the study. In the second round (hereafter "observed inclusion"), an unfamiliar peer was excluded by two unfamiliar excluders (i.e., confederates 3–5). In the third round, a novel unfamiliar peer (i.e., confederate 7) was excluded by a novel unfamiliar peer (i.e., confederate 6) and the participants' best friend. To control for possible effects of gender, we ensured that all players in the exclusion round were of the same gender as the participant. The "exclusion" round was preprogrammed such that one of the three players (confederate 7) received the ball only once at the start

of the game and did not receive the ball for the remaining of the round (Williams, 2007). For the remainder of the 29 throws, the other players solely passed to each other.

To keep participants engaged in the task during the observed Cyberball rounds they were asked to keep track of how many times every player received the ball and report this on paper. Participants were told that all Cyberball sessions were online such that all players would watch the ball-tossing games and that all players knew that they would be watched during these games.

Mood. Participants rated their own mood at four different moments throughout the experiment: (1) before and (2) after the inclusion, (3) after observed inclusion and (4) after observed exclusion. Additionally, participants were asked to estimate the mood of a randomly chosen player in the observed inclusion round and estimate the mood of all three players from the observed exclusion round. The mood assessments were based on three items for the youngest participants (feeling happy, sad, and angry); for the older two age groups there was an additional fourth item (feeling good). All items were scored on a 7-point scale; scores were averaged where higher scores indicated better mood ('sad' and 'angry' were recoded before averaging).

Intentions to punish and help. After the observed inclusion Cyberball round, participants were asked to indicate, on a 7-point scale ranging from 1 (*fully disagree*) to 7 (*fully agree*) to what extent they intended to punish or to help one randomly chosen player of the previous round. They were asked to do the same after the observed exclusion Cyberball round for each of the three players in that round. Higher scores indicate higher intention to punish or help the other player.

Allocation games. At the start of the experimental session, before Cyberball, participants played one allocation round for all players that they had met and for their friend. This was used as a baseline measure of their allocation behavior toward specific players. In addition, after each consecutive Cyberball round, participants played two sets of allocation games in which they could distribute valuable coins between themselves and the players from the previous Cyberball round. It was explained that these allocation games were offline such that no one else could see their decisions. It was also explained that the coins they distributed in the games would be converted to money and that their decisions in these games would be anonymously added to their final earnings as well as those of the other players. In the end, all participants received the same amount of money for these games (€2,-). Participants played these allocation games with one randomly chosen player after the inclusion and observed inclusion rounds because players during the inclusion round were indistinguishable (i.e., they were all confederates that the participant had just met and showed the same behavior during Cyberball). After the observed exclusion round, the participants played the allocation games with each of the three players from that round.

Dictator Game. In the Dictator Game, the participants were asked to divide 10 coins between themselves and the other player. They could choose from seven fixed divisions. These divisions were depicted by numbers on the computer screen from left to right with the 5/5 option in the middle of the screen. Participants could select a division by clicking on the bullet point below their division of choice (see Figure 2). The number of coins allocated to the other player was used in the analyses.

Altruistic Punishment/Compensation Game. After every Dictator Game following observed Cyberball rounds, participants played the Altruistic Punishment/Compensation Game, a costly allocation game in which the choice architecture was designed so that the opposite sides of the scale represented costly punishment and costly compensation (i.e., helping) and the middle point represented an equity option (see Figure 3). In other words, participants could choose to stick to the equity distribution of 10 coins for self and 10 coins for other or to deviate from the equity distribution by paying coins to either increase (i.e., costly compensation) or decrease (i.e., costly punishment) the payoff of the other player (Güroğlu et al., 2013; Leliveld, Van Dijk, & Van Beest, 2012; Will et al., 2013). The number of coins allocated to the other player was used in the analyses; this number could thus range between 1 and 19. Importantly, allocating 10 points to the other player indicates an equal distribution entailing no costs to the participant.

Statistical Analyses

To test our hypotheses, we performed a series of within-subjects analyses. First, we conducted two repeated measures (RM) analyses of variance (ANOVAs) to examine whether the various Cyberball sessions influenced self-mood ratings and

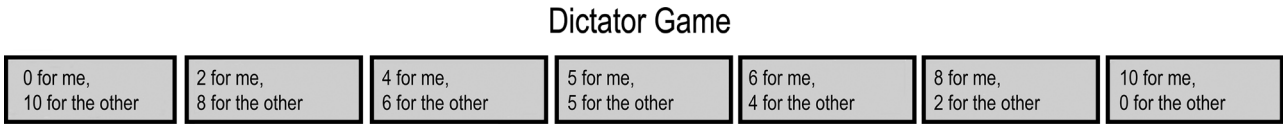

FIGURE 2 Depiction of onscreen possible coin division in the Dictator Game. From left to right: 10 coins for the other player, 0 for themselves (0/10); 8 for the other player, 2 for themselves (2/8); 6 for the other player, 4 for themselves (4/6); 5 for the other player, 5 for themselves (5/5); 4 for the other player, 6 for themselves (6/4); 2 for the other player, 8 for themselves (8/2); or 0 for the other player, 10 for themselves (10/0).

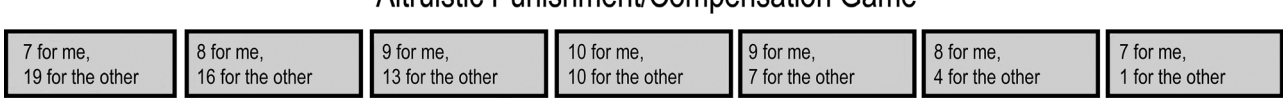

FIGURE 3 Depiction of onscreen possible coin division in the Altruistic Punishment/Compensation Game. From left to right: 7 coins for themselves, 19 for the other player (7/19); 8 coins for themselves, 16 for the other player (8/16); 9 coins for themselves, 13 for the other player (9/13); 10 coins for both themselves and the other player (10/10); 9 coins for themselves and 7 for the other player (9/7); 8 coins for themselves and 4 for the other player (8/4); or 7 for themselves and 1 for the other player (7/1).

other-mood estimations for different players (unfamiliar excluder, friend excluder, and victim) over time. Next, to examine participants' motivations to compensate and punish other players after inclusion-observation and exclusion-observation Cyberball, we conducted two RM ANOVAs on intentions to punish and help for the different players (unfamiliar includer, unfamiliar excluder, victim, and friend excluder). Finally, to examine the influence of various Cyberball sessions on punishment and compensation behavior, we conducted two RM ANOVAs to, respectively, compare the Dictator Game and the Altruistic Punishment/Compensation Game allocations made for the four different players (Unfamiliar Includer, Unfamiliar Excluder, Victim, and Friend Excluder). In the Dictator Game, we compared allocations for each player with the baseline Dictator Game allocations before the Cyberball session. In the Punishment/Compensation game, we also conducted separate paired-sample *t*-tests to examine whether the allocations for the four players deviated from an allocation of 10 coins in the equity option. We also examined correlations between intentions to punish and help and allocation behavior. In all our analyses, we corrected for multiple comparisons and reported Bonferroni-corrected results (with alphas adjusted based on the number of comparisons for each respective analysis).

RESULTS

Manipulation Check

As an index of attentiveness, we compared tallies kept by participants to the actual throws made. This comparison showed that almost all participants counted the number of throws correctly and were paying attention to the Cyberball game. Two participants counted 20 balls thrown to all participating players (instead of the correct 10) in the observed inclusion round but still had an accurate tally in the observed exclusion round. Because of the accurate tally in the exclusion round, these participants were not excluded from the analyses. There were no significant differences between age groups for any of the tallies kept during the inclusion or exclusion Cyberball games (all $p > .15$), indicating that there was no age difference in the amount of attention paid during the Cyberball games. For all the results reported here, we used Greenhouse-Geisser corrections when the assumption of sphericity was violated.

Mood

In order to investigate changes in mood, we conducted a RM ANOVA with Time (four levels: Baseline, Inclusion, Observed inclusion, and Observed Exclusion) as the within-subjects factor and Age Group (three levels: 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds) as the between-subjects factor. Figure 4a displays means for self-mood ratings. There was a significant main effect of Time, $F(2.03,\ 166.17) = 10.20$, $p < .001$, $\eta^2 = .157$. The main effect of Age Group was not significant, $F(2,\ 82) = 2.90$, $p = .060$, $\eta^2 = .066$. The interaction between Time and Age group was not significant, $F(4.05,\ 166.17) = 2.39$, $p = .051$, $\eta^2 = .055$. Pairwise comparisons (corrected for five comparisons; $\alpha = .01$) showed that mood ratings were significantly higher after Inclusion Play ($M = 6.46$) than

at baseline ($M = 6.26$; $t(85) = -2.73$, $p < .014$, $\eta^2 = .021$). Mood ratings did not differ significantly between Inclusion Play and Observed Inclusion ($M = 6.54$; $t(85) = 0.68$, $p = .167$). Most importantly, mood ratings were significantly lower after Observed Exclusion ($M = 5.93$) than after baseline ($M = 6.260$, $t(85) = 2.862$, $p = .006$, $\eta^2 = .10$) and after Observed Inclusion ($M = 6.54$; $t(85) = 4.79$, $p < .001$, $\eta^2 = .06$).

Estimates of Others' Mood

A RM ANOVA was conducted with Player (three levels: Unfamiliar Excluder, Friend Excluder, and Victim) as the within-subjects factor and Age Group (three levels: 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds) as the between-subjects factor to examine estimates of others' mood after observed Exclusion Cyberball (Figure 4b). There was a main effect of Player on mood ratings, $F(1.34, 110.15) = 349.32$, $p < .001$, $\eta^2 = .81$, indicating that participants rated the moods of players differently. The main effect of Age Group ($F(2, 83) = 0.0003$, $p = 1$) and the interaction between Player and Age Group were not significant, $F(2.68, 110.15) = 1.87$, $p = .028$.

Pairwise comparisons (corrected for five comparisons; $\alpha = .01$) indicated that (1) there were no differences in mood ratings for the Unfamiliar Excluder ($M = 6.57$) and the Friend Excluder ($M = 6.69$; $t(85) = -1.39$, $p = .17$) and (2) mood ratings for the victim ($M = 3.06$) were significantly lower than for both the Friend Excluder ($M = 6.69$; $t(85) = 21.43$ $p < .001$, $\eta^2 = .57$) and the Unfamiliar Excluder ($t(85) = 19.24$, $p < .001$, $\eta^2 = .52$).

Intentions to Punish and Help

To investigate whether there were differences in intentions to punish and help excluders and victims, we conducted two RM ANOVAs with Player (four levels: Unfamiliar Includer, Unfamiliar Excluder, Friend Excluder, and Victim) as within-subjects factor and Age Group (three levels: 9–11-year-olds, 12–13-year-olds, and 15–16-year- olds) as between-subjects factor (see Figure 5a,b).

There was a significant main effect of Player, $F(1.74, 143.38) = 76.17$, $p < .001$, $\eta^2 = .482$, on intention to punish. The interaction between Player and Age Group was not significant, $F(3.49, 143.38) = 0.69$, $p = .58$. Post hoc comparisons (corrected for seven comparisons; $\alpha = .007$) revealed that (1) participants intended to punish the unfamiliar excluder ($M = 3.40$) more than the friend excluder ($M = 2.85$) and (2) participants intended to punish the friend excluder more ($M = 2.85$) than the victim ($M = 1.09$) and the unfamiliar includer ($M = 1.31$) (all p-values $< .001$).

With respect to intentions to help, there was a significant main effect of Player, $F(2.245, 183.92) = 92.84$, $p < .001$, $\eta^2 = .53$, and Age Group, $F(2, 83) = 5.519$, $p = .006$, $\eta^2 = .12$. The Player × Age Group interaction was not significant ($p = .076$). Pairwise comparisons (corrected for seven comparisons; $\alpha = .007$) showed that participants intended to help the unfamiliar excluder less ($M = 1.78$) than the friend excluder ($M = 2.51$; $t(84) = 3.91$, $p < .001$, $\eta^2 = .04$) and the unfamiliar includer ($M = 2.58$; $t(84) = 5{,}42$, $p < .001$, $\eta^2 = .08$) and indicated to want to help the victim ($M = 5.36$) more than the friend excluder ($t(84) = 9.55$, $p < .001$, $\eta^2 = .21$) and the unfamiliar includer

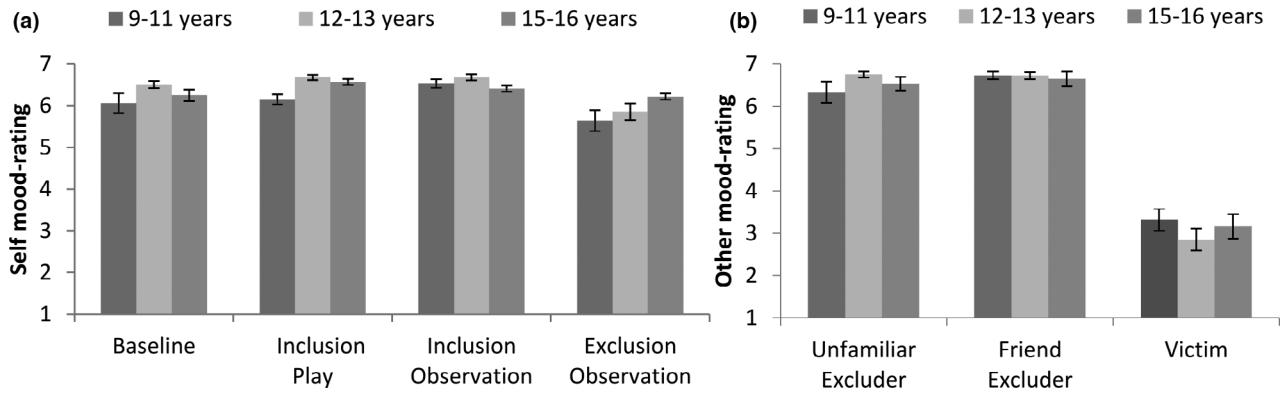

FIGURE 4 (a) Average self-mood ratings at baseline (before Cyberball), and after playing inclusion, observing inclusion, and observing exclusion Cyberball rounds. Error bars display 95% confidence intervals (CI) of the standard error. (b) Average other-mood ratings after Cyberball observed exclusion for the unfamiliar excluder, friend excluder, and victim. Error bars display 95% CI of the standard error.

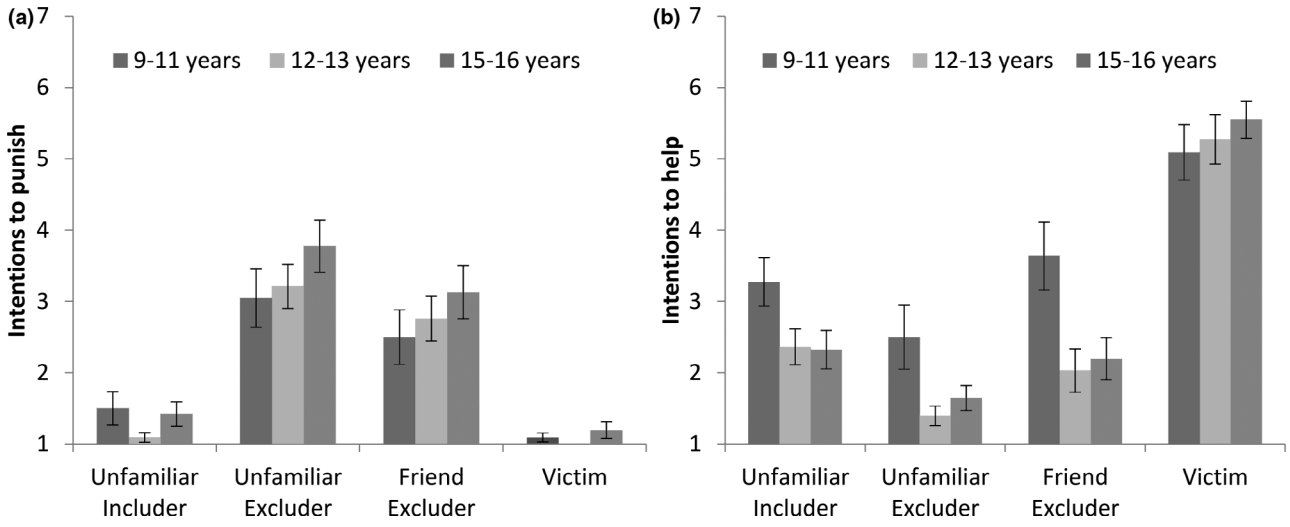

FIGURE 5 (a) Intentions to punish the unfamiliar excluder, friend excluder and the victim following Cyberball observed exclusion for 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds. Error bars display 95% CI of the standard error. (b) Intentions to help the unfamiliar excluder, friend excluder, and the victim following Cyberball observed exclusion for 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds. Error bars display 95% CI of the standard error.

($t(84) = 11.84$, $p < .001$, $\eta^2 = .28$). Post hoc tests revealed that 9–11-year-olds ($M = 3.70$) had significantly higher intentions to help than 12–13-year-olds ($M = 2.76$; $t(84) = 3.18$, $p = .007$), and that 9–11-year-olds did not significantly differ from 15–16-year-olds ($M = 2.93$; $t(84) = 2.37$, $p = .020$), nor did 12–13-year-olds ($M = 2.76$) from 15–16-year-olds ($M = 2.93$; $t(84) = 0.87$, $p = 1$).

Punishment of Excluders and Compensation of Victims After Observed Exclusion

Dictator Game. In order to investigate punishment and compensation of excluders and victims after observed exclusion, we examined changes in Dictator Game allocations after observed exclusion toward the four players (unfamiliar includer, unfamiliar excluder, friend excluder, and victim) relative to baseline Dictator Game allocations. Points allocated to the other players in the Dictator Game at baseline (before Cyberball) were averaged across unfamiliar includers. Specifically, we conducted a RM ANOVA with Round (two levels: baseline and after Cyberball) and Player (four levels: Unfamiliar Includer, Unfamiliar Excluder, Friend Excluder, and Victim) as within-subjects factors and Age Group (three levels: 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds) as between-subjects factor for the Dictator Game (see Figure 6a).

Results yielded a main effect of Player, $F(2.34, 192.24) = 23.28$, $p < .001$, $\eta^2 = .22$. There was no main effect of Age Group, $F(2, 82) = 0.87$, $p = .422$, or Round, $F(1, 82) = 1.22$, $p = .27$. The Player × Age Group interaction was not significant, $F(4.69, 192.24) = 1.77$, $p = .12$). The Round × Player interaction was significant, $F(2.12, 174.18) = 17.86$, $p < .001$, $\eta^2 = .18$. Pairwise comparisons (corrected for six comparisons; $\alpha = .00833$) showed that, on average, participants gave (1) fewer coins (all ps $< .001$) to unfamiliar excluders ($M = 2.66$, $SD = 1.84$) compared to unfamiliar includers ($M = 4.01$, $SD = 1.88$), (2) fewer coins to unfamiliar includers ($M = 4.01$, $SD = 1.88$) than to friend excluders ($M = 4.53$, $SD = 2.20$), and (3) an equal number of coins to friend excluders and victims ($M = 4.89$, $SD = 2.46$).

To investigate the interaction effect between Round and Player in more detail, we conducted four separate RM ANOVAs (one for each player; corrected for four comparisons; $\alpha = .0125$) with Round (two levels: baseline and after Cyberball) as factor. These analyses showed that in comparison to baseline distributions, the number of coins given after Cyberball (1) to unfamiliar excluders decreased, $F(1, 82) = 43.60$, $p < .001$, $\eta^2 = .35$, (2) to the victim increased, $F(1, 82) = 8.55$, $p < .001$, $\eta^2 = .09$, and (3) did not change for friend excluders, $F(1, 82) = 1.67$, $p = .20$, and unfamiliar includers, $F(1, 82) = 0.68$, $p = .41$.

Altruistic Punishment/Compensation Game. To investigate punishment and helping behavior in

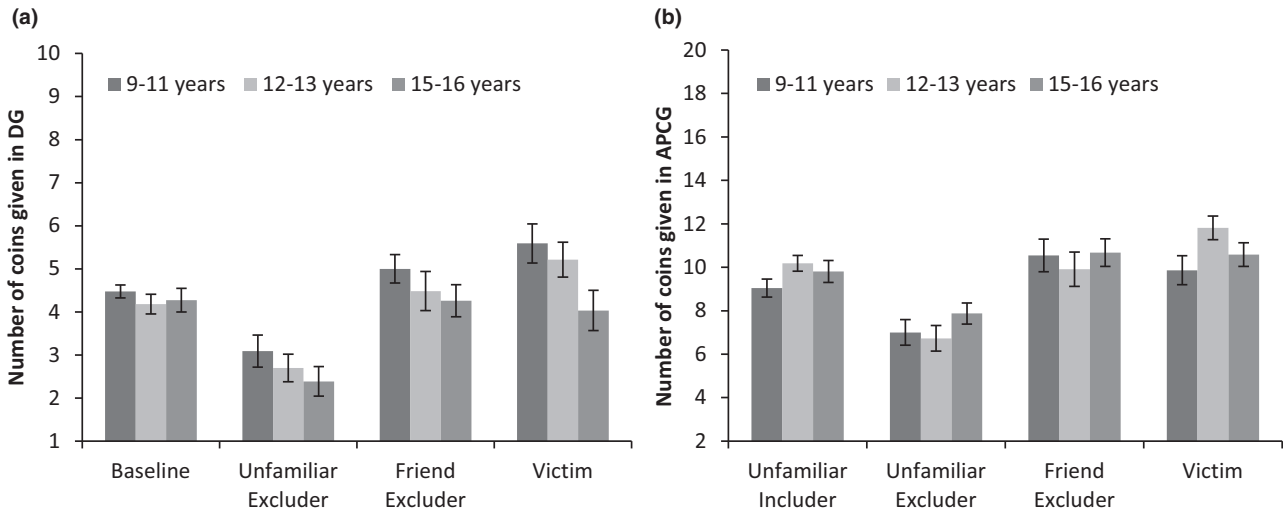

FIGURE 6 (a) Number of coins allocated in Dictator Game at baseline (before Cyberball interactions) and following Cyberball exclusion observation to unfamiliar excluder, friend excluder, and victim. Error bars display 95% CI of the standard error of the mean. A division of five coins represents the equity option. (b) Number of coins allocated in Altruistic Punishment/Compensation Game to unfamiliar includer (following Cyberball observed inclusion) and to unfamiliar excluder, friend excluder, and victim (following Cyberball observed exclusion). Error bars display 95% CI of the standard error of the mean. A division of 10 coins represents the equity option.

the Altruistic Punishment/Compensation Game, we conducted a RM ANOVA with Player (four levels: unfamiliar includer, unfamiliar excluder, friend excluder, and victim) as within-subjects factor and Age Group (three levels: 9–11-year-olds, 12–13-year-olds, and 15–16-year-olds) as between-subjects factor (See Figure 6b).

Results showed a main effect of Player, $F(2.26, 185.44) = 23.81$, $p < .001$, $\eta^2 = .23$; the Age Group main effect and Player × Age Group interaction were not significant, $F(2, 82) = 1.83$, $p = .17$ and $F(4.23, 185.43) = 2.19$, $p = .064$, respectively. Post hoc paired-sample t-tests (corrected for three comparisons; $\alpha = .016$) showed that participants gave (1) fewer coins to unfamiliar excluders ($M = 7.21$) than to unfamiliar includers ($M = 9.72$; $t(84) = 6.10$, $p < .001$, $\eta^2 = .09$), (2) fewer coins to unfamiliar includers ($M = 9.72$) than to victims ($M = 10.92$; $t(84) = 3.67$, $p < .001$, $\eta^2 = .03$), and (3) an equal number of coins to friend excluders ($M = 10.35$) and victims ($M = 10.92$; $t(84) = -0.97$, $p = .33$).

Next, to be able to draw conclusions about actual punishment and compensation behavior (helping), we compared numbers of coins given to players with the number of coins in the equity option (i.e., 10 coins for other) as a measure of deviations from the equity option. We conducted a series of t-tests per player (unfamiliar includer, unfamiliar excluder, friend excluder and victim; corrected for four comparisons; $\alpha = .0125$) where we compared the number of coins given to players to the set value of 10. Results yielded significant differences from the equity option for two of the four players: unfamiliar includers ($M = 9.72$) were neither punished nor helped ($t(84) = -0.97$, $p = .34$, $\eta^2 = .84$), unfamiliar excluders ($M = 7.21$) were punished ($t(84) = -8.48$, $p < .001$, $\eta^2 = .59$), friend excluders ($M = 10.35$) were neither punished nor helped ($t(84) = 0.83$, $p = .41$) and victims ($M = 10.92$) were helped ($t(84) = 2.82$, $p < .001$, $\eta^2 = .76$).

Relation Intentions and Actual Helping and Punishment Behavior

To investigate whether participants followed up on intentions to help or punish players, we examined the correlations between intentions to help or punish and actual behavior in the Altruistic Punishment/Compensation Game. We did not look at the Dictator Game allocations because giving less coins to the other is not costly to the participant in the Dictator Game (whereas helping is). In the Altruistic Punishment/Compensation Game, both helping and punishment are costly.

All intentions to punish a player and the respective number of coins allocated were significantly negatively correlated (for victim $r(85) = -.26$, unfamiliar excluder $r(85) = -.35$, friend excluder $r(85) = -.31$; all $p < .05$), indicating that the more

participants indicated to want to punish a player, the less coins they gave them. The intentions to help and the number of coins given in the Altruistic Punishment/Compensation Game were significantly correlated for victims and friends (for victim $r(85) = .24$, friend $r(85) = .24$, both $p < .05$), but not for unfamiliar excluders ($r(85) = .099$, $p = .36$).

DISCUSSION

This study examined punishment and compensation after observed exclusion in late childhood and adolescence in an experimental setting using Cyberball, with a specific focus on how friendship with the excluder modulates behavioral responses to observing social exclusion. We specifically examined how witnesses of social exclusion treated perpetrators depending on whether the perpetrator was their friend or an unknown peer. We replicated earlier findings showing that witnesses of social exclusion report decreases in mood and subsequently punish excluders and help victims. Our results extend prior work by showing that altruistic punishment decisions strongly depend on friendship with the excluder. That is, even though witnesses report equal intentions to punish friend and unfamiliar excluders, they punish unfamiliar excluders, while refraining from punishing their best friend.

Effects of Witnessing Social Exclusion on Self- and Other-Mood Ratings

We replicated earlier findings of witnessing Cyberball leading to decreased mood ratings (Güroğlu et al., 2013; Wesselmann et al., 2009; Will et al., 2013). After witnessing social exclusion, we found no age differences in self- and other-mood ratings between the ages of 9 and 16. As expected, participants of all ages estimated victims to feel worse than excluders. These results show that participants aged 9–16 are able to understand the emotional consequences of social exclusion for the victim. Although previous studies have examined mood estimations of victims (Will et al., 2015), to the best of our knowledge, no studies have investigated mood estimations of excluders. We found that friend excluders and unfamiliar excluders were estimated to have similar levels of mood. Interestingly however, all participants estimated high (positive) mood for excluders, showing that individuals do not estimate bullies to feel particularly bad.

Effects of Witnessing Social Exclusion on Intentions to Help and Punish

Participants aged 9–16 intended to punish unfamiliar excluders more than friend excluders, and both unfamiliar and friend excluders more than the victim. The reverse was true for intentions to help. All participants intended to help the victim more than the excluders and to help the friend excluder more than the unfamiliar excluder. Thus, the relationship the witness has with the excluder influences their intentions to punish or help. These results indicate that participants intended to treat their friend more positively than an unfamiliar excluder despite their identical norm-violating behavior.

The youngest participants had slightly higher intentions to help other players than the older participants. Potentially, indicating to help others might be seen more as a social norm among younger participants, whereas older participants are more likely to make helping judgments based on individual behavior and merit (Güroglu et al., 2014). It has been shown that with age, adolescents move away from strictly egalitarian views and increasingly base their fairness judgments on individual achievements and circumstances (Almas, Cappelen, Sorensen, & Tungodden, 2010; Meuwese, Crone, de Rooij, & Güroğlu, 2015).

Effects of Witnessing Social Exclusion on Subsequent Treatment of Excluders and Victims

By comparing changes in Dictator Game allocations after Cyberball to allocations at baseline (which were made before any Cyberball interactions), we showed that (1) includers and friend excluders were treated the same before and after Cyberball, (2) victims received more coins after being excluded than at baseline (and were thus helped), and (3) unfamiliar excluders were given less coins after excluding than at baseline (and were thus punished). As such, although participants of all ages indicated that they wanted to punish both friend excluders as well as unfamiliar excluders, unfamiliar excluders were actually punished for their norm-violating behavior but friend excluders were not. This punishment of unfamiliar excluders was in line with previously reported intentions, but participants treated friend excluders as if nothing had happened and gave them same amount of coins as at baseline.

This pattern of findings was replicated using the Altruistic Punishment/Compensation Game. In contrast to the Dictator Game, no baseline

measures are needed in the Altruistic Punishment/Compensation Game as each option represents punishment or compensation. Nonetheless, it has been shown in previous studies (Gunther Moor et al., 2012; Will et al., 2013) that increases and decreases in generosity in the Dictator Game reflect punishment and compensation. In the Altruistic Punishment/Compensation Game, participants could choose an equal distribution without incurring any costs to themselves and act in line with the "fairness" norm. Because deviations from this equal distribution were costly, they can be used as an index of costly punishment and compensation behavior. Our results showed that participants incurred costs to punish unfamiliar excluders and to help victims, just as they intended. However, friend excluders were not punished: they typically received an equal distribution of coins. In other words, despite indications of wanting to punish friends, participants were again not willing to incur costs to do so. It should be noted that, although the behavioral patterns in the two games seem similar, the two games differ in terms of costs of making equal distributions. In the Dictator Game, participants actually incur costs to ensure an equal distribution of coins for the victims and friend excluders, whereas in the Altruistic Punishment/Compensation Game participants do not seem to be willing to incur extra costs if they can ensure the equal coin allocation with no costs attached. Together, these results show that both when punishment is costly or non-costly, children and adolescents punish unfamiliar excluders while refraining from punishing their best friend after excluding a peer.

Prosocial treatment of friends, regardless of their prior norm-violating behavior, underlines the value of friendship in childhood and adolescence. Even though a friend might act as a bully toward others, such behavior might often not lead to differential treatment. The underlying processes might partially be explained by fundamental attribution biases (Ross, 1977). Speculatively, thoughts and knowledge about the motivations of the other players might modulate to what extent individuals show actual punishment or compensation behavior. It could be that participants more readily justified the excluding behavior of their friends while being less forgiving of unfamiliar excluders. As attributions of causality to external factors rather than internal factors take away part of the perceived responsibility of the excluder, witnesses might feel that their friend does not need punishment, whereas the unfamiliar excluder does.

An important note regarding the role of friendship in our results is that we cannot exclude the possibility that differential treatment toward friend excluders and unfamiliar excluders is confounded by familiarity with the friend. That is, we cannot rule out that similar results can be obtained for differential treatment of unfamiliar versus familiar peers (such as neutral peers from the classroom who are not friends of the participant). However, it has previously been shown in adults that the degree to which observers like excluders and victims does affect the degree to which they punish and compensate them (Güroğlu et al., 2013), supporting the idea that relationships could play an important role. Future studies should rule out these possibly confounding effects of familiarity of friends by examining the role of different peer relationships (e.g., best friend/neutral peer/disliked peer) in adolescent populations.

Absence of Age Differences in Punishment of Excluders and Compensation of Victims

We found no effects of age on self-mood ratings, other-mood ratings, and allocations on either the Dictator Game or the Altruistic Punishment/Compensation Game. In line with previous findings, we did not expect age differences on mood ratings. Prior studies have reported similar decreases in mood across broad age ranges (Abrams, Weick, Thomas, Colbe, & Franklin, 2011; Saylor et al., 2013) and our findings confirm these by showing that participants as young as 9 years old are negatively affected by observations of social exclusion.

However, our findings did not confirm the expected age differences in subsequent treatment of excluders and victims. First, we expected to find an age-related increase in punishment of excluders (i.e., decreasing number of allocated coins) and in compensation of victims (i.e., increasing number of allocated coins) across adolescence. Our findings, however, show that 9–16-year-olds have similar fairness considerations (as assessed by the Dictator Game) and costly punishment and compensation behavior (as assessed by the Altruistic Punishment/Compensation Game).

Second, whereas we expected the youngest age groups not to differ in treatment of excluders and victims, we expected to find a gradual increase in differentiation between players with increasing age. Contrary to these expectations, our findings show that participants as young as 9 years old differentiate between individuals with different roles in social exclusion. Not only did the youngest

participants differentiate between excluders and victims, they also differentiated between unfamiliar and friend excluders and treated unfamiliar excluders more harshly than friend excluders. In a previous study, Will et al. (2013) showed that 9-year-olds make similar Dictator Game allocations for excluders and victims, distributing coins equally between themselves and the other players, whereas 11-year-olds differentiated between excluders and victims. This might be explained by the difference between the study designs. In the design by Will et al. (2013), ball-possession in Cyberball was worth extra participant money such that the participants could earn money for every time they received the ball. The introduction of this economic element made the decision process more complicated, possibly driving the youngest children, who possibly lacked the contextual integration skills of older children, to make their allocation decisions based on fairness heuristics instead of on the contextual information.

In addition, in this study, our youngest age group covered the age range of 9–11 years, with a mean age that was closer to 11. It is thus likely that the ability to incorporate information about others' behavior into decision making develops indeed around the age of 11. It is worthwhile for future studies to focus more on younger age groups to pinpoint the cognitive abilities that contribute to this behavioral development. Several prior studies indicate that perspective-taking skills might contribute to the age-related increases in incorporating complex forms of contextual information into decision making (Güroğlu et al., 2009; Will et al., 2013). Future studies should thus further investigate the fine-grained cognitive and behavioral changes that occur across early childhood and adolescence.

IMPLICATIONS

Our findings have implications for interventions to prevent social exclusion. Specifically, our results suggest that displays of exclusion behavior of friends might be perceived less negatively than those of strangers. While witnesses might punish excluders in certain situations where the excluder is unfamiliar to them, they might refrain from doing so if the excluder is their friend. As such, it might be useful for future interventions, in addition to targeting excluders themselves, to specifically identify and target friends of bullies and perpetrators of social exclusion. Subsequently, such interventions can draw more attention to the friend's excluding behavior as it might simply be overlooked by the friend who witnesses. Additionally, interventions may focus on altering perceptions of a friend's excluding behaviors to reduce the degree to which they condone this behavior (e.g., by stressing the negative consequences for the victim). Our results importantly show that friendships with excluders may influence the effectiveness of interventions aimed at reducing social exclusion through peer interventions.

CONCLUSIONS: TURNING A BLIND EYE?

This study showed that witnesses of social exclusion punish excluders less severely when they are friends with them. Our results show that children and adolescents, like adults (Güroğlu et al., 2013), treat excluders differently when they are friends with them. The differential treatment of friends and unfamiliar excluders was consistent across ages, such that even 9-year-olds treated friends differently than unfamiliar excluders. This finding highlights the developmental significance of friendships and that the reciprocal norms that come with friendships are important before entering adolescence (Hartup, 1996; Hay, Payne, & Chadwick, 2004). Based on our findings, we can hypothesize that one of the reasons for the lack of involvement of witnessing children and adolescents in real-life exclusion situations might be that these witnesses are the excluder's friends (Darley & Latane, 1968). Real-life excluders might often not be punished by friends for their behavior. To end on a more positive note, unfamiliar victims were still helped and unfamiliar excluders were still punished. Even though friend excluders might not be punished for excluding behavior, witnesses are still willing to incur costs to help victims and to punish unfamiliar excluders. This is promising for interventions that aim to reduce bullying and social exclusion through peer interventions.

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